

GB777277

Publication Title:

An improved fastening device for attaching an article to a panel or like support

Abstract:

Abstract of GB777277

777,277. Bolting; releasable fastenings. SALTER & CO., Ltd., G. Jan. 16, 1956 [Feb. 1, 1955], No. 2911/55. Classes 44 and 89(1). A fastening device for securing an article to a panel 13, Fig. 4, or like support, comprises a sheet metal base 1 provided with means for engaging the article and having pressed out of it a spring-tongue 6 carrying a detent 9. To mount the device on the panel, the tongue is passed through an aperture 11 and the device is moved along until the detent locks in a second aperture 12. To remove the device, the tongue-end 7 is prized downwardly to release the detent. The article-engaging means may comprise bent-up sides 2, Fig. 5, resiliently to engage a moulding strip 5, e.g. on a motor vehicle, a spring-clip of general utility, or a clip to receive a cable or rod. In another arrangement, a sheet-metal nut 18, Fig. 9, to receive a plain or screwed-stud 20, is pressed out of the base.

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PATENT SPECIFICATION

777,277

Inventor:—GERALD CECIL HALE.



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International Classification :—F06b.

COMPLETE SPECIFICATION.

An Improved Fastening Device for Attaching an Article to a Panel or like Support.

We, GEORGE SALTER & Co. LIMITED, a British Company, of 144 High Street, West Bromwich, Staffordshire, do hereby declare the invention, for which we pray

5 that patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an improved 10 fastening device for attaching or securing an article or part to a panel or like support, said fastening device being of the kind comprising a sheet-metal base-plate provided with means for engaging the article or part, 15 or a member associated therewith, and provided with a spring tongue insertable through an aperture in the panel or support from the front face of the latter and engageable with the rear face thereof.

The object of the present invention is to 20 provide a simple form of fastening device, of the kind referred to, having means for positively interlocking with the panel or support.

According to the invention a fastening 25 device for attaching or securing an article or part to a panel or like support comprises a sheet-metal base-plate provided with means for engaging the article or part,

30 or member associated therewith, and said base-plate having pressed out of it a rearwardly displaced spring tongue extending behind the main portion of the base-plate, said spring tongue being insertable from the

35 front of the panel or like support through one aperture provided in the latter and carrying a detent adapted, when the fastening device is displaced relatively to said panel or like support, automatically to said

40 spring into and interlock with a second

aperture provided in the panel or like support.

The arrangement is preferably such that when the detent has engaged the second aperture the fastening device is held against displacement in a plane parallel to the panel or support. Conveniently the detent is pressed out of the body of the spring tongue so as to take an inclined position relatively to the latter.

Reference may now be had to the accompanying drawings in which various embodiments of the invention are illustrated.

Figures 1 to 5 show a fastening device intended for attaching a moulding strip to a body panel of a motor vehicle.

Figure 1 is a perspective view of the fastening device before use.

Figure 2 is a top plan view.

Figure 3 is a side elevation.

Figure 4 is a longitudinal section through the fastening device shown attached to a body panel.

Figure 5 is a section on line V—V, Figure 4, showing, in addition, an affixed moulding strip, also in section.

In Figures 6 to 11, which illustrate other embodiments of the invention.

Figure 6 shows, in longitudinal section, a fastening device for securing a cable or rod to a panel.

Figure 7 is a top plan view of another form of fastening device incorporating a sheet-metal nut.

Figure 8 is a longitudinal section showing the fastener illustrated in Figure 7 in use for securing together two panels in parallel planes.

Figure 9 is a longitudinal section showing a fastener similar to that in Figure 8 but

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adapted for securing two panels at right angles.

Figure 10 is a sectional view of another form of fastening device used in conjunction with a plain-shank stud for clamping together two panels.

Figure 11 is a perspective view of a further form of fastening device having spring clip arms carried on a panel-engaging base-plate.

Referring to Figures 1 to 5 of the drawings, the fastening device, intended for attaching a moulding strip to a body panel of a motor vehicle, comprises a flat sheet metal base-plate 1 of spring steel, two opposite edges of which are curled over in a forward direction to form resilient marginal portions 2, 2, of arched or convex cross-section with curved outwardly-presented faces 3, 3. These forwardly-curved edge portions 2, 2, of the base-plate 1 are adapted to engage with the inturned flanges 4, 4, at the rear of an open-backed D-sectioned moulding strip 5 by a snap action (see Figure 5).

Pressed rearwardly out of the middle portion of the base-plate 1 is a parallel-sided spring tongue 6 which extends parallel to and in the same direction as the forwardly curled edges 2, 2, of the base-plate and which also lies nearly parallel to the base-plate 1, being inclined towards the latter at a small angle in a direction towards its free end 7. In order to bring the tongue 6 into the desired spaced relationship to the base-plate 1 its inner or root-end 8 is bent first rearwardly from the plate 1 and then forwardly behind the latter, to give said inner or root-end 8 a cranked formation. The said spring tongue 6 is provided at a point towards its free end 7 with a detent 9 pressed out of the body part of the tongue 6 and inclined at a suitable angle to the tongue in a direction towards the root-end 8 and projecting forwardly towards the base-plate 1. The said detent 9 is of semi-circular contour, being integrally joined at its greatest width to the body of the tongue 6. The free extremity 7 of the tongue 6 is bent rearwardly at a suitable angle to form a lug for disassembly purposes, as hereinafter described.

The panel, in conjunction with which the fastening device is intended to be used for attaching the moulding strip 5 thereto, is shown at 10 in Figures 4 and 5, and has formed in it two spaced-apart circular holes 11 and 12, the hole 11 being of larger diameter than the hole 12. The thickness 60 of the panel 10 is substantially equal to the distance by which the root end 8 of the tongue 6 of the fastening device is offset from the base-plate 1, and in order to attach the device to the panel 10 the free end 7 of the spring tongue 6 is inserted, from the front of the panel, through the larger hole 11 and the base-plate 1 is moved bodily over the front face 13 of the panel 10 so as to cause the detent 9 to ride over the rear face 14 thereof until the said detent reaches the smaller hole 12, when the resiliency of the tongue 6 causes it to spring into interlocking engagement with the hole 12. At the same time the body part of the tongue 6 moves into gripping contact with the said rear face 14 by virtue of its initial small inclination towards the base-plate 1.

The spacing of the two holes 11 and 12 in the panel 10 is such that when the detent 9 springs into the smaller hole 12 with its free-edge in contact with the wall of the said hole, the cranked root-end portion 8 of the tongue 6 is in contact at its opposite sides with the edge of the larger hole 11 at two points at its circumference, so that relative movement of the fastener device is prevented in all directions.

In assembling the moulding strip 5 on to the panel 10 the fastening device is first mounted on the panel as above described and then the molding strip is sprung over the forwardly-curved edge portions 2, 2, of the base-plate 1. To remove the fastening device from the panel 10 the inclined lug at the free end 7 may be prised rearwardly by means of a suitable tool so as to withdraw the detent 9 from the smaller hole 12, when the base-plate 1 can then be slid along the panel and the tongue 6 removed through the larger hole 11.

The holes 11 and 12 in the panel 10 may be of any other suitable shape than circular and the detent 9 may be of any contour other than semi-circular.

Other embodiments of the invention are realised in fastening devices which include a base-plate having a resilient, detent-carrying tongue and having article-engaging or article-securing means suitably modified for carrying or securing an article or articles other than a moulding strip, the said base-plate and tongue constituting a latching means and being of the same form as hereinbefore described in connection with the moulding strip fastening device and adapted to be attached to an apertured base or supporting panel in the manner described.

Referring now to Figures 6 to 11 of the drawings, which show such further embodiments of the invention, the base-plate part of the various fastening devices and the apertured supporting panel are given the same reference numerals as before.

In Figure 6 the article-engaging means comprises a spring clip or resilient sleeve 16 integral with the base-plate 1, being formed by curling an end portion of the said base-plate 1 in a forward direction and inwardly, and adapted to grip and hold in position a cable or rod (indicated at 17).

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In the embodiments shown in Figures 7 to 9, the base-plate 1 is formed with a sheet-metal nut 18 having a spiral thread-engaging portion 19 adapted for engaging with a threaded bolt 20 which may be used to secure an article, such as the further panel 21, to the panel 10. The flat form of fastening device in Figures 7 and 8 is adapted for securing the panel 21 in a plane parallel to the panel 10, but if desired, the base-plate 1 may be bent as shown in Figure 9 so as to be adapted for securing the panel 21 in a plane perpendicular to the panel 10.

The embodiment shown in Figure 10 is similar to that in Figures 7 and 8 instead of the base-plate 1 being formed with a bolt-receiving nut part, it is formed with a stud or rivet engaging part which comprises two spring tongues 22, 22, pressed out of the body of the base-plate 1 and adapted to frictionally grip the plain shank 23 of a headed stud or rivet 24.

This stud or rivet 24 may then be used in the same way as the bolt 20 described in the last embodiment for securing or clamping a panel 21 to the panel 10.

Many other constructions of fastening device having, in accordance with the invention, a base-plate 1 as hereinbefore described and carrying a range of different article-engaging means are possible. One further embodiment, by way of example, is illustrated in Figure 11 of the drawings, in which the base-plate 1 is provided at opposite sides with integral spring arms 25, 25, to form a spring clip of general utility.

If desired, the construction of the base-plate and tongue latching means may be modified so that instead of the tongue having the detent 9 pressed out of it, as hereinbefore described, it could carry bent-up detents at opposite edges.

Variations of the shape, size or relative positions of the holes in the supporting panel will cater for a controlled amount of axial, vertical, or longitudinal "float", or combinations thereof. This is an advantage with curved mouldings, or with diecast or plastic components mounted with a plurality of clips.

What we claim is:—

1. A fastening device for attaching or

securing an article or part to a panel or like support, comprising a sheet-metal base-plate provided with means for engaging the article or part, or a member associated therewith, and said base-plate having pressed out of it a rearwardly-displaced spring tongue extending behind the main portion of the base-plate, said spring tongue being insertable from the front of the panel or like support through one aperture provided in the latter and carrying a detent adapted, when the fastening device is displaced relatively to said panel or like support, automatically to spring into and interlock with a second aperture provided in the panel or support.

2. A fastening device, as claimed in Claim 1, wherein the detent carried by the spring-tongue is pressed out of the body part of the latter.

3. A fastening device, as claimed in Claim 1 or 2, wherein the spring tongue is spaced from, but inclined in the direction of its length at a small angle towards, the base-plate.

4. A fastening device, as claimed in any of Claims 1 to 3, wherein the base-plate has curled-over opposite edges forming resilient marginal portions adapted to engage an open-backed, D-sectioned moulding strip.

5. A fastening device, as claimed in any of Claims 1 to 3, wherein the base-plate carries spring clip means.

6. A fastening device, as claimed in any of Claims 1 to 3, wherein the base-plate is provided with a threaded-bolt engaging means.

7. A fastening device, as claimed in any of Claims 1 to 3, wherein the base-plate is provided with stud or shank engaging means consisting of spring tongues pressed out of the body of the base-plate and adapted to frictionally grip the stud or shank.

8. A fastening device substantially as herein described with reference to any of the Figures of the accompanying drawings.

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PROVISIONAL SPECIFICATION.

An Improved Fastening Device for Attaching an Article to a Panel or like Support.

100 We, GEORGE SALTER & Co. LIMITED, a British Company, of 144 High Street, West Bromwich, Staffordshire, do hereby declare this invention to be described in the following statement:—

This invention relates to an improved 105 fastening device for attaching an article to a panel or like support, said fastening device being of the kind comprising a sheet-metal base-plate provided with means for holding

an article thereon and provided with a spring tongue insertable through an aperture in the panel or support from the front face of the latter and engageable with the rear face thereof. Such a fastening device may be used, for example, for attaching a moulding strip to a body panel of a motor vehicle.

The object of the present invention is to provide a simple form of fastening device, 10 of the kind referred to, having means for positively interlocking with the panel or support.

According to the invention a fastening device for attaching an article to a panel or like support comprises a sheet-metal base-plate provided with an article engaging means at the front side and having pressed out of it a rearwardly displaced spring tongue extending behind the main portion of the base-plate, said spring tongue being insertable from the front of the panel or support through one aperture provided in the latter and carrying a detent adapted, when the fastening device is displaced relatively to 25 said panel or support, automatically to spring into and interlock with a second aperture provided in the said panel or support.

The arrangement is preferably such that 30 when the detent has engaged the second aperture the fastening device is held against displacement in a plane parallel to the panel or support. Conveniently the detent is pressed out of the body of the spring tongue 35 so as to take an inclined position relatively to the latter.

In carrying out a convenient embodiment 40 of the invention in connection with a fastening device intended for attaching a moulding strip to a body panel of a motor vehicle, the device comprises a flat sheet-metal base-plate conveniently of spring steel, two opposite edges of which are curled over in a forward direction to form resilient marginal 45 portions of arched or convex cross-section with curved outwardly-presented faces. These forwardly-curled edge portions of the base-plate are adapted to engage with the inturned flanges at the rear of an open-backed D-sectioned moulding strip by snap action.

Pressed rearwardly out of the middle portion of the base-plate is a spring tongue extending parallel to and in the same direction as the forwardly curled edges of the base-plate and also lying nearly parallel to the base-plate, being inclined towards the latter at a small angle in a direction towards its free end. In order to bring the tongue 55 into the desired spaced parallel relationship to the base-plate its inner or root-end is bent first rearwardly from the plate and then forwardly behind the latter, to give said inner or root-end a cranked formation. The said

spring tongue which may have parallel sides is provided at a point towards its free end with a detent pressed out of the body part of the tongue and being inclined at a suitable angle to the tongue (for example, at about 45°) in a direction towards the root-end and projecting forwardly towards the base-plate. The said detent is conveniently of semi-circular contour, being integrally joined at its greatest width to the body of the tongue. The free extremity of the tongue is bent rearwardly at a suitable angle to form a lug whereby the device may be removed from the panel by means of a tool as hereinafter described.

The panel has formed in it two spaced apart circular holes one of which is of larger diameter than the other. In order to attach the device to the panel the free end of the spring tongue is inserted, from the front of the panel, through the larger hole and the base-plate is moved bodily over the front face of the panel so as to cause the detent to ride over the rear face thereof until the said detent reached the smaller hole when the resiliency of the tongue causes it to spring into interlocking engagement with the hole and at the same time the body part of the tongue preferably moves into gripping contact with the said rear face.

The spacing of the two holes in the panel is such that when the detent springs into the smaller hole with its free-edge in contact with the wall of the said hole, the cranked root-end portion of the tongue is in contact at its opposite sides with the edge of the larger hole at two points at its circumference, such that relative movement of the fastener device is prevented in all directions.

In assembling the moulding strip on to the panel the fastening device is first mounted on the panel as above described, and then the moulding strip is sprung over the forwardly-curled edge portions of the base-plate. To remove the fastening device from the panel the inclined lug at the free end may be prised rearwardly by means of a suitable tool so as to withdraw the detent from the smaller hole, when the base-plate can be slid along the panel and the tongue removed through the larger hole.

The holes in the panel may be of any other suitable shape than circular and the detent may be of any contour other than semi-circular. Also the base-plate may be suitably modified for carrying an article or articles other than a moulding strip, as, for example, a range of cable clips.

In a still further modification, instead of the spring tongue having a detent pressed out of it as above described it could carry bent up detents at opposite edges.

Variations of the shape, size or relative positions of the holes will cater for a con-

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trolled amount of axial, vertical, or longitudinal "float", or combinations thereof. This is an advantage with curved mouldings, or with diecast or plastic components
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Fig. 1.

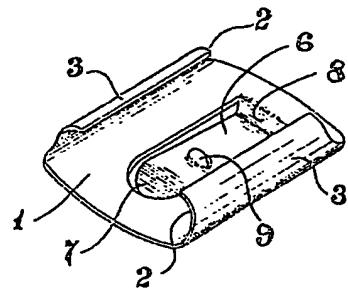


Fig. 2.

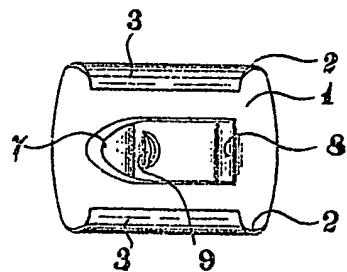


Fig. 3.

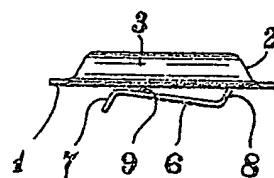


Fig. 4.

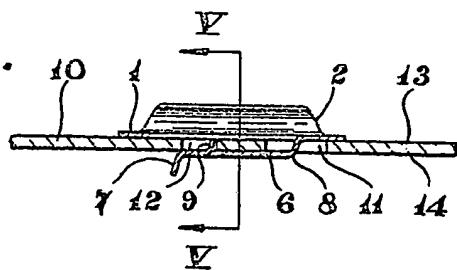
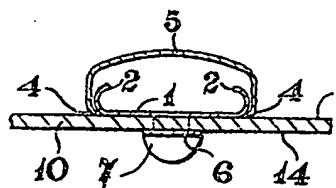


Fig. 5.

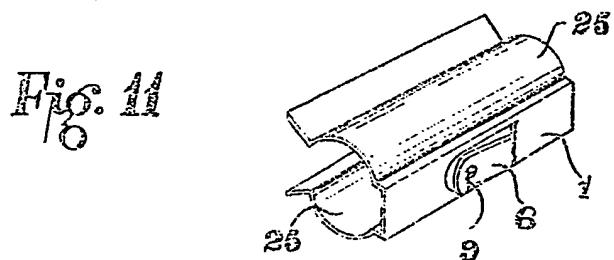
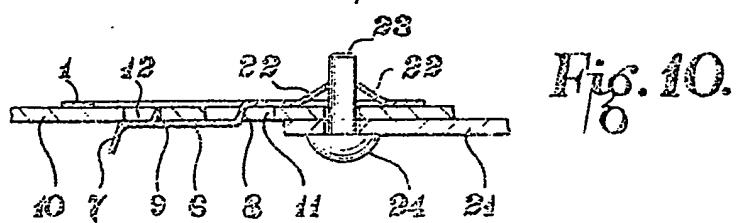
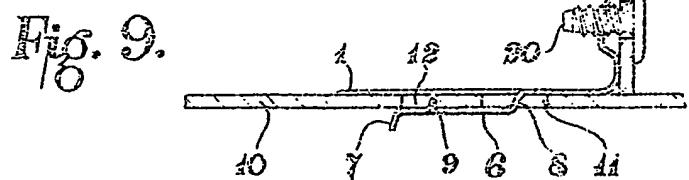
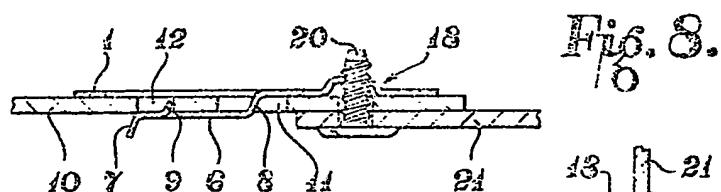
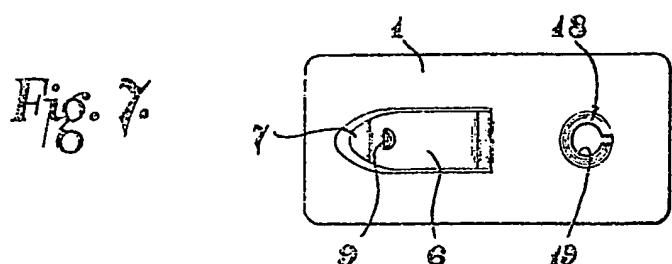
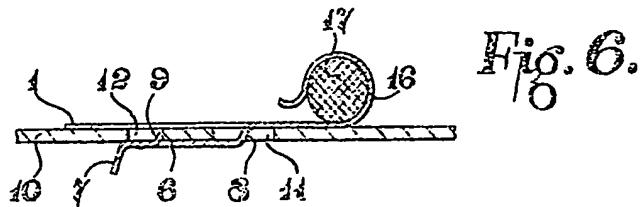


777,277 COMPLETE SPECIFICATION

2 SHEETS

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the Original on a reduced scale.

SHEETS 1 & 2



777,277 COMPLETE SPECIFICATION
2 SHEETS This drawing is a reproduction of
the Original on a reduced scale.
SHEETS 1 & 2

Fig. 1.

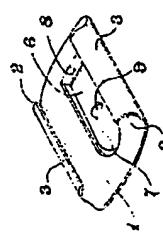


Fig. 2.

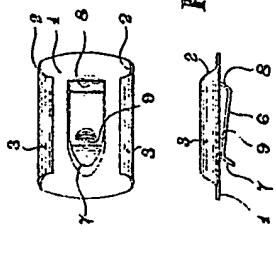


Fig. 3.

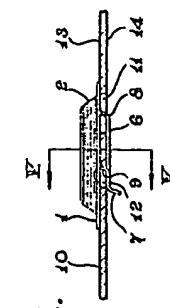


Fig. 4.

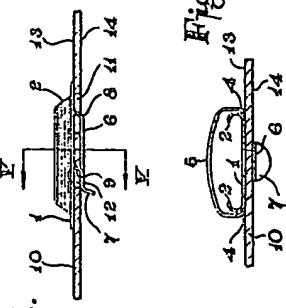


Fig. 5.

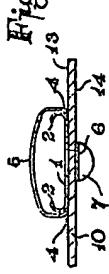


Fig. 6.

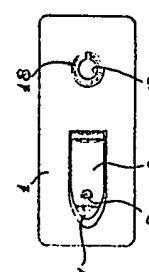


Fig. 7.

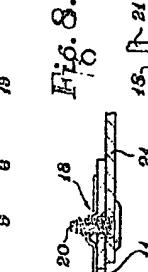


Fig. 8.

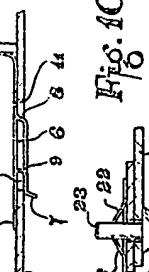


Fig. 9.

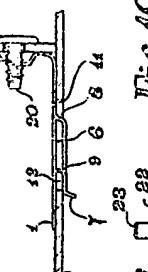


Fig. 10.

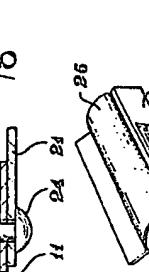


Fig. 11.

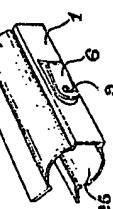


Fig. 6.

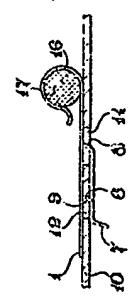


Fig. 6.

